Practice: 591 - Amend. for Treat. of Ag. Waste

Scenario: #1 - Litter Amendments applied for Water Quality Impacts

Scenario Description:

This practice scenario includes the application of a litter treatment amendment that is approved by NRCS to the entire poultry house to reduce water-soluble phosphorous in the poultry litter by a specified percentage. The amendment used is proven to transform nitrogen into a form of ammonium and reduce the concentration of water-soluble phosphorous in the litter and reduces ammonia levels in the house. Resource concerns from existing nutrient levels may contribute to water quality degradation from nutrient runoff and leaching from fields fertilized with poultry litter and air quality impacts such as objectionable odors and ammonia emissions.
Associated practices: Nutrient Management (590).

Before Situation:

Integrator does not currently apply waste treatment amendments to the litter that reduce ammonia emissions and soluble phosphorus.

After Situation:

This scenario is based on a typical poultry operation with a desired application rate is 10% by weight of the litter (10%w/w) of a phosphorus binding amendment. Typical operation consists of 2 houses, 40' x 400' house (16,000 SF), 20,000 birds (4 pound finished bird weight), 0.5 lb litter/bird (assume 54 pounds P205/Ton of litter). The operation raises 5 flocks per year.
Formula to calculate required amendment at the prescribed rate in tons per year is:
(Number of birds) X (Finish weight of birds (lbs)) X (Pounds of litter)/bird) X (Number of houses) X (application rate) X (Number of applications per year) / 2000 pounds/ton
20,000 birds X 4 lb bird X 0.50 lb litter/bird X 2 houses X 0.10 lb amendment/lb litter X 5 app/year / 2000 lb/ton = 20 tons/year.
An NRCS approved amendment is applied between each flock at the prescribed rate. The selected amendment is applied in conformance with the manufacturer's recommendations and the rates required. The amendment is proven to reduce soluble phosphorus in the litter, to control the odor, and to reduce ammonia emissions. The resulting litter contains higher levels of nutrients and nutrient management plans must account for this. Nutrient level testing of the litter and nutrient planning shall be in conformance with CPS Nutrient Management, Code 590. The amendment successfully addresses water quality degradation due to nutrients in surface and ground water and air quality impacts from objectionable odors, ammonia emissions, PM and PM precursors and bird health resource concerns. When this practice is applied in a nutrient limited watershed in Oklahoma, the only acceptable application rate shall be 10 percent by weight of the litter.

Scenario Feature Measure: Tons of amendment per year.

Scenario Unit: Ton

Scenario Typical Size: 20

Scenario Cost: $12,807.20 **Scenario Cost/Unit:** $640.36

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Application of ag waste amendment for poultry litter	2020	Litter amendment application performed in house. Includes equipment, power unit and labor costs.	Ton	$47.60	20	$952.00
Materials						
Ag Waste Amendment, aluminum sulfate, alum	1684	Aluminum sulfate, alum, poultry Litter amendment. NRCS approved for air and water quality concerns to reduce ammonia emissions and soluble phosphorus in the litter. Materials only.	Ton	$592.76	20	$11,855.20